

What is claimed is:

1. An image data generating apparatus comprising:
 - an image data generating mechanism configured to generate image data;
 - 5 an output process control information obtaining mechanism configured to obtain output process control information obtained by combining a characteristic of said image data generating apparatus with image processing characteristics associated with a predetermined output apparatus, which is configured to provide a visual presentation of an image from said image data; and
 - 10 an image file assembly mechanism configured to generate a process control data containing the output process control information.
2. The image data generating apparatus of claim 1, wherein:
 - the image file assembly mechanism is configured to include said process
 - 15 control data in an image file that contains said image data.
3. The image data generating apparatus of Claim 2, wherein:
 - said output file being an ExIf file.
- 20 4. The image data generating apparatus of Claim 3, wherein:
 - the process control data being an Makernote portion of the ExIf file.
5. The image data generating apparatus of Claim 1, wherein:
 - the output process control information containing information for controlling
 - 25 image processing of the image data at the predetermined output apparatus.
6. The image data generating apparatus of Claim 5, wherein:
 - the output process control information includes gamma correction information.

09471-02001
T00220 T12T4660

7. The image data generating apparatus of Claim 6, wherein:
said process control data further comprising additional information that is correlated to said image data, said additional information including at least one of color space information, contrast information, color balance information, sharpness
5 information, color correction information, shadow point information, highlight point information, brightness correction information, and highlight color information.
8. The image data generating apparatus of Claim 1, further comprising:
an output process control information generating mechanism configured to
10 create the output process control information.
9. The image data generating apparatus of Claim 1, further comprising:
a storage mechanism that is configured to hold therein the output process control information, wherein
15 said output process control information obtaining mechanism being configured to obtain said output process control information from said storage mechanism.
10. The image data generating apparatus of claim 1, further comprising:
a data transfer mechanism configured to transmit the image data and the
20 process control data.
11. The image data generating apparatus of claim 1, wherein:
the image data generating apparatus being at least one of a digital still camera, a digital video camera, and a scanning device.
25
12. An image data generating apparatus comprising:
an image data generating mechanism configured to generate image data of a subject;
a first image obtaining mechanism configured to obtain first information for
30 faithfully reproducing a color of the subject, the first information including reproduction

characteristics of a predetermined output apparatus, which is configured to provide a visual presentation of an image from said image data;

5 a second image obtaining mechanism configured to obtain second information for specifying an image quality adjustment process to be performed on said image data by said predetermined output apparatus, the second information including reproduction characteristics of the predetermined output apparatus; and

an image file assembly mechanism configured to generate an image file containing the image data and at least one of the first information and the second information.

10

13. The image data generating apparatus of Claim 12, wherein:

said image file assembly mechanism configured to include the image data, the first information and the second information in said image file.

15

14. The image data generating apparatus of Claim 12, wherein:

the first information includes at least one of gamma correction information, color space information, and negative image data value information.

20

15. The image data generating apparatus of Claim 12, wherein:

the second information includes at least one of an image correction characteristic associated with generating a print data from an image data.

25

16. The image data generating apparatus of Claim 15, wherein:

the second information includes at least one of contrast information, color balance information, sharpness information, stored color correction information, shadow point information, highlight point information, saturation information, and brightness correction information.

30

17. The image data generating apparatus of Claim 12, wherein:

the image data generating apparatus being at least one of a digital still camera,

a digital video camera, and a scanning device.

18. An image data generating apparatus, comprising:

means for generating image data;

5 means for obtaining output process control information and combining the operating characteristic of said means for generating image data with image processing characteristics associated with a predetermined output apparatus, which is configured to provide a visual presentation of an image from said image data; and

10 means for generating a process control data containing the output process control information.

19. The image data generating apparatus of Claim 18, wherein:

15 said means for generating image data, means for obtaining output control information, and means for generating a process control data each being a computer program product having computer readable instructions.

20. The image data generating apparatus of Claim 19, wherein:

20 the means for generating image data including means for including said process control data in an image file that also contains said image data.

21. The image data generating apparatus of Claim 18, wherein:

the output process control information includes gamma correction information.

22. An image data generating apparatus comprising:

25 means for generating image data of a subject;

means for obtaining first information for faithfully reproducing a color of the subject, the first information including reproduction characteristics of a predetermined output apparatus, which is configured to provide a visual presentation of an image from said image data;

30 means for obtaining second information for specifying an image quality

adjustment process to be performed on said image data by said predetermined output apparatus, the second information including reproduction characteristics of the predetermined output apparatus; and

5 means for generating an image file containing the image data and at least one of the first information and the second information.

23. The image data generating apparatus of Claim 22, wherein:

said means for generating an image file includes means for including the image data, the first information and the second information in said image file.

10

24. The image data generating apparatus of Claim 22, wherein:

the first information includes at least one of gamma correction formation, color space information, and negative image data value information.

15

25. The image data generating apparatus of Claim 22, wherein:

the second information includes at least one of contrast information, color balance information, sharpness information, stored color correction information, shadow point information, highlight point information, saturation information, and brightness correction information.

20

26. A method for generating an image data, comprising steps of:

generating image data;

obtaining output process control information and combining an operating characteristic of an image capturing apparatus with image processing characteristics associated with a predetermined output apparatus, which is configured to provide a visual presentation of an image from said image data; and

25

generating a process control data containing the output process control information.

30

27. The method of Claim 26, wherein:

said steps of generating image data, obtaining output process control information, and

generating a process control data being computer-implemented process steps.

5 28. The method of Claim 27, further comprising a step of:

including said process control data in an image file that also contains said image data.

10 29. The method of Claim 26, wherein:

the output process control information includes gamma correction information.

15 30. A method for generating an image data, comprising steps of:

generating image data of a subject;

obtaining first information for faithfully reproducing a color of the subject, the first information including reproduction characteristics of a predetermined output apparatus, which is configured to provide a visual presentation of an image from said image data;

obtaining second information for specifying an image quality adjustment process to be performed on said image data by said predetermined output apparatus, the second information including reproduction characteristics of the predetermined output apparatus; and

generating an image file containing the image data and at least one of the first information and the second information.

25 31. The method of Claim 30, wherein:

said generating an image file step includes including the image data, the first information and the second information in said image file.

30 32. The method of Claim 30, wherein:

the first information includes at least one of gamma correction information,

color space information, and negative image data value information.

33. The method of Claim 30, wherein:

5 the second information includes at least one of contrast information, color balance information, sharpness information, stored color correction information, shadow point information, highlight point information, saturation information, and brightness correction information.

10 34. A propagated data signal for conveying image data and image processing control data that corresponds with a combined use of an image data generating apparatus and a predetermined output apparatus, said propagated data signal comprising:

an image data containing digital image data of a subject captured from the image data generating apparatus; and

15 a process control data, said process control data including a first data segment containing first information for faithfully reproducing a color of the subject, the first information including reproduction characteristics of the predetermined output apparatus, which is configured to provide a visual presentation of an image from said digital image data, and

20 a second data segment containing second information for specifying an image quality adjustment process to be performed on said digital image data by said predetermined output apparatus, the second information including reproduction characteristics of the predetermined output apparatus.

25 35. The propagated data signal of Claim 34, wherein:

the first information includes at least one of gamma correction information, color space information, and negative image data value information.

36. The propagated data signal of Claim 34, wherein:

30 the second information includes at least one of contrast information, color balance information, sharpness information, stored color correction information,

shadow point information, highlight point information, saturation information, and brightness correction information.

37. The propagated data signal of Claim 34, wherein:

5 said image data and said process control data being included as part of an ExIf file that is embodied in said propagated data signal.

38. An image processing apparatus configured to perform image processing on image data, comprising:

10 a processor; and

 a data retrieval mechanism configured to retrieve said image data and a process control data associated with the image data, wherein

 the process control data containing output process control information obtained by combining an operating characteristic of an image data generating
15 apparatus and a predetermined output apparatus, which is configured to provide a visual presentation of an image from said image data;

 a data provide mechanism configured to provide the image data and the process control data to the processor; and wherein

 said processor being configured to perform image processing on said image
20 data using the image data and the output process control information.

39. The image processing apparatus of Claim 38, wherein:

 if the process control data is not retrieved, the data provide mechanism provides the image data and a predetermined process control data to the processor, and
25 wherein the predetermined process control data is configured to general purpose image processing.

40. The image processing apparatus of Claim 38, wherein:

 said processor being hosted in a computer.

41. The image processing apparatus of Claim 38, wherein the predetermined output apparatus being a printer.

5 42. The image processing apparatus of Claim 38, wherein:
the image file includes said process control data and said image data in a single file.

43. The image processing apparatus of Claim 42, wherein:
the process control data being stored an Makernote portion of the ExIf file, and
10 the data retrieve mechanism retrieves the Makernote portion to obtain the process control data.

44. The image processing apparatus of Claim 42, wherein:
the output process control information containing information for controlling
15 image processing of the image data at the predetermined output apparatus.

45. The image processing apparatus of Claim 44, wherein:
the output process control information includes gamma correction information.

20 46. The image processing apparatus of Claim 45, wherein:
said process control data further comprising additional information that is correlated to said image data, said additional information including at least one of color space information, contrast information, color balance information, sharpness information, color correction information, shadow point information, highlight point
25 information, brightness correction information, and highlight color information.

47. An image processing apparatus configured to perform image processing on image data of a subject, said image data retrieved from an image file, comprising:
a processor;

090471-023001
FOUO-PT-1600

a data retrieval mechanism configured to retrieve said image file and provide the image file to the processor, said image file including

first information for faithfully reproducing a color of the subject, the first information including reproduction characteristics of a predetermined output
5 apparatus, which is configured to provide a visual presentation of an image from said image data;

second information for specifying an image quality adjustment process to be performed on said image data by said predetermined output apparatus, the second information including reproduction characteristics of the predetermined output
10 apparatus; wherein

said processor being configured to implement

a first reproduction mechanism configured to perform image processing on said image data with said first information to faithfully reproduce a color of the subject, and

15 a second reproduction mechanism configured to perform a reproduction process specified for said image data based on said second information; and

an image data output mechanism configured to output the image data after said image data has been processed by said first reproduction mechanism and said second
20 reproduction mechanism.

48. The image processing apparatus of Claim 47, wherein:

the first information includes at least one of gamma correction information, color space information, and negative image data value information.

25

49. The image processing apparatus of Claim 47, wherein:

the second information includes at least one of an image correction characteristic associated with generating a print data from an image data.

30

50. The image processing apparatus of Claim 49, wherein:

the second information includes at least one of contrast information, color

balance information, sharpness information, stored color correction information, shadow point information, highlight point information, saturation information, and brightness correction information.

5 51. The image processing apparatus of Claim 47, wherein:
said image processing apparatus includes a printer.

52. An image processing apparatus configured to perform image processing on image data retrieved from an image file, comprising:

10 a processor; and

means for retrieving said image file and providing the image file to the processor, said image file including

the image data, and

15 a process control data containing output process control information obtained by combining operating characteristics of an image data generating apparatus and a predetermined output apparatus, which is configured to provide a visual presentation of an image from said image data, wherein

said processor including means for processing said image data using the image data and the output process control information.

20

53. The image Processing apparatus of Claim 52, wherein:

the image file includes said process control data and said image data in a single file.

25 54. The image processing apparatus of Claim 53, wherein:

the output process control information includes gamma correction information.

55. An image processing apparatus configured to perform image processing on image data of a subject, said image data retrieved from an image file, comprising:

30 a processor; and

means for retrieved said image file and providing the image file to the processor, said image file including

first information for faithfully reproducing a color of the subject, the first information including reproduction characteristics of a predetermined output apparatus, which is configured to provide a visual presentation of an image from said image data;

second information for specifying an image quality adjustment process to be performed on said image data by said predetermined output apparatus, the second information including reproduction characteristics of the predetermined output apparatus, wherein

said processor being configured to implement

means for performing image processing on said image data with said first information to faithfully reproduce a color of the subject, and

means for performing a reproduction process specified for said image data based on said second information; and

means for outputting the image data after said image data has been processed by said means for performing image processing and said means for performing a reproduction process.

56. The image processing apparatus of Claim 55, wherein:

the first information includes at least one of gamma correction information, color space information, and negative image data value information.

57. A method for processing image data, comprising steps of:

retrieving said image data and a control data from an external source; providing the image data and the control data to the processor, wherein

the process control data containing output process control information obtained by combining operating characteristics of an image data generating apparatus and a predetermined output apparatus, which is configured to provide a visual presentation of an image from said image data; and

processing said image data using the image data and the output process control

information.

58. The method of Claim 57, wherein:

said process control data and said image data being included in a single file.

5

59. The method of Claim 57, wherein:

the processing step includes processing of the image data at the predetermined output apparatus.

10

60. The method of Claim 59, wherein:

the output process control information includes gamma correction information.

15

61. A propagated data signal for conveying image data and image processing control data that corresponds with a combination of an image data generating apparatus and a predetermined output apparatus, said propagated signal comprising:

an image segment containing the image data to be image processed;

20

an image processing control segment containing the image processing control data for controlling the output apparatus to perform image processing on said image data using the image data and the image processing control data, and wherein the image processing control data includes output process control information, which is configured to provide a visual presentation of an image from said image data.

62. A computer program product, comprising:

a computer storage medium; and

25

a computer program code stored in the computer storage medium for implementing an image processing on the computer, the computer program code having

30

a first computer code configured to retrieve image data and process control data associated with the image data, wherein the process control data containing output process control information obtained by combining an operating characteristic of an image data generating apparatus and a predetermined output apparatus, which is

configured to provide a visual presentation of an image from said image data,

a second computer code configured to perform image processing on the image data using the image data and the output process control information, if the process control data is retrieved.

5

63. A computer program product of Claim 62, further comprising:

a third computer code configured to perform image data processing on the image data using a predetermined process control data, if the process control data is not retrieved, and wherein the predetermined process control data is configured to general purpose image processing.

10

64. An image data processing system, comprising:

an image data generating device configured to generate image data;

an output process control information obtaining mechanism configured obtain output process control information obtained by combining the characteristic of said image data generating device with image processing characteristics associated with a predetermined output device, which is configured to provide a visual presentation of an image from said image data;

15

an image file assembly mechanism configured to generate an image file that includes the image data and the process control data which contains the output process control information;

20

a processor; and

a data retrieval mechanism configured to retrieve said image file and provide the image file to the processor, wherein

25

said processor being configured to perform image processing on said image data using the image data and the output process control information.

65. The system of Claim 64, further comprising:

a personal computer that contains said processor and said data retrieval mechanism.

30

operating characteristic of said means for generating image data with image processing characteristics associated with a predetermined output apparatus, which is configured to provide a visual presentation of an image from said image data;

5 means for generating an image file with a process control data containing the output process control information;

a processor; and

means for retrieved said image file and providing the image file to the processor, said image file including

the image data, and

10 the process control data, wherein

said processor including means for processing said image data using the output process control information.

68. An image data processing system, comprising:

15 means for generating an image file, including,

means for generating image data of a subject,

20 means for obtaining first information for faithfully reproducing a color of the subject, the first information including reproduction characteristics of a predetermined output apparatus, which is configured to provide a visual presentation of an image from said image data,

means for obtaining second information for specifying an image quality adjustment process to be performed on said image data by said predetermined output apparatus, the second information including reproduction characteristics of the predetermined output apparatus, and

25 means for generating the image file containing the image data and at least one of the first information and the second information; and

an image processing apparatus including,

a processor, and

30 means for retrieved said image file and providing the image file to the processor, said image file including

the image data, the first information and the second information,
wherein
said processor including means for processing said image data using the first
information and the second information.

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.